# MICRODOT PORTABLE STAMPER

## PORTABLE version "SM-110/30-HP/P"



## STAND-ALONE version "SM-110/30-HP/C"

$C\epsilon$

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## *General warnings for security*

1. Read carefully instructions relative to installation.

2. The m/c has to be installed in environment grounded/earthed.

3. Avoid to placing any object on the cable of feeding. The m/c should be placed so that the wires of feeding, ground and connection can't be trodden upon or damaged accidentally.

4. Do not try to repair machine. Opening and removal of coverings puts a person at high voltage, dangerous for his own security.

5. For any maintenance it is necessary to disconnect the m/c from the mains. In particulars :
- If the cable of feeding or the plug is damaged;
- When liquid has been accidentally spilled on the marking m/c
- In case the machine has been exposed to rain or bad weather;
- When the  machine doesn't react correctly to instructions, execute only the check operations as seen in the " maintenance" ; any other intervention could damage the m/c;
- If machine has fallen or been damaged;
If machine has evident signs of bad working and its performances are no more in conformity to characteristics, please follow maintenance instructions, and in negative case, call assistance.

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### Warning!

**If it blocks or stops due to an interruption of the electric or pneumatic energy, before to intervene on the unit, it is necessary to disconnect completely the machine from its energy sources.**

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| SM-110/30-HP/P | Stamper in portable version with serial interface for PC |
|---|---|



## *CONFIGURATION :*

| TESTA TES-P5-P | MARKING HEAD IN PORTABLE VERSION |
|---|---|
| BOX BOX-P5 | ELECTRONIC BOX |
| CAV-SER-P5 | SERIAL CABLE PC/STAMPER (3 m) |
| ALI-V5 | ELECTRIC FEEDER WITH CABLE AND SPIRAL AIR TUBE |
| FILTRO-FIL-P1 | 20 um AIR FILTER |
| CAV-ALI-1 | 1.5 m POWER CABLE |
| SISM | FLOPPY-DISK STAMPER PROGRAM (PC NOT INCLUDED) |
| NEEDLE ASSY ( OPTION ) | NEEDLE ASSEMBLY (**OPTION**) to be selected in relation to the needs |

## *SPECIFICATIONS :*

| STAMPER WEIGHT | 3Kg |
|---|---|
| MARKING AREA | 110 x 30 mm ( 0.025 mm per step ) |
| POWER SUPPLY | 90 – 264 Vac ( 50/60Hz ) ( 15 W ) . For the marking head: 24 Vdc |
| PNEUMATIC FEEDER | 7 BAR max ( standard consumption 5NL/1') with dry and not lubricated air |
| DISPLAY | LCD  Back-lit ( 2 lines for 40 characters ) |
| KEYBOARD | 60 alphanumeric keys with multifunctions keys |
| OPERATING WAY | AUTONOMOUS OR WITH PC |
| OPERATOR INTERFACE | From Stamper, with preset parameters (Easy to use)<br>From PC, with visualization in Text and Graphic mode. (Other functions are options) |
| MARKING JOBS | TEXT, DATE, SERIAL NUMBERING, DRAWINGS and PLT, PAUSE, CIRCULAR MARKING, PRODUCTION CONTROL |
| METERING SYSTEM | mm , inch , Bar , PSI , MPa |
| MARKING SPEED | 4  Characters/ second  max. (in relation to the parameters) |
| DOTS DISTANCE | Programmable from 0.1 to 2mm  in step of 0.1 mm ( 100 dots / cm ) |
| MEMORY | 512 Kb ( 100 programmable memories) + PC MEMORY |
| MARKING FORCE | Up to 5KN per dot |
| MULTILANGUAGE | 5 Resident ( DEUTSCH-ENGLISH-FRANCAIS-ESPANOL-ITALIANO ) |
| FONT | 5 resident ( ISO 3098- DIN1451- BLOCK OUTLINE- UNIVERSAL- MATRIX 5X7 (+ 13 options ) |
| I/O STANDARD ( 24 Vdc ) | LOCAL Start, I/O remote, Start, Stop, FM, OK, Cycle |

## *MAIN OPTIONS :*

| NASSY-VL/60 | Light needle Assembly ( 60°, radius 0.3) |
|---|---|
| NASSY-VL/90 | Light needle Assembly ( 90° ,  radius 0.5) |
| NASSY-VLX | Long light needle Assembly |
| ND-L60N | Light needle (60°, radius 0.3) |
| ND-L90N | Light needle (90°, radius 0.5) |
| ND-LNX | Long light needle |
| ADA-FLES-1 | Universal workpiece Adapter |
| ADA-TONDO-1 | Adapter for marking on tube |
| ADA-MAGN-1 | Adapter for marking on magnetic workpiece |
| RC | Remote Control with  : Start , Stop |
| SM-FONT-XXXX | Option available fonts |
| OCX | Program to develop in easy way Custom PC Interfaces |
| SW-NET | Program to manage SCHILLING network (Max 32 stampers) |
| BOX-232 | RS232/485 Interface Box for Network (1 for each stamper + 1 for PC) |
| | |
| MF-S V5 | Low-cost manual Column and base for multifunction use (Portable/Stand-alone) |
| MF-10 V5 | Manual column and base for multifunction use |
| V5-BAT | Portable electric feeder (encluding batteries: 8 hours range at 10%, 4 hours at 25%) |

| SM-110/30-HP/C | STAND-ALONE or COLUMN version. Working with or without PC |
|---|---|



## CONFIGURATION :

| TESTA TES-P5-C | Marking head for Stand-alone or Column version |
|---|---|
| BOX  BOX-P5 | ELECTRONIC BOX |
| ALI-P1S | Electric feeder with cable and non spiral air tube |
| FILTRO FIL.P1 | 20 um air filter |
| CAV-TB-P-3 | BOX/Marking head standard cable ( 3 m.  length ) |
| CAV-ALI-1 | Power supply cable (1.5 m standard) |
| SQA-001 | Plate for fastening the cable to the  head |
| SISM | FLOPPY DISK  Stamper Program (PC NOT INCUDED) |
| NEEDLE ASSY (OPTION) | **OPTION** Needle Assembly. To be selected in relation to the needs |

## SPECIFICATIONS  :

| STAMPER WEIGHT | 2Kg |
|---|---|
| MARKING AREA | 110 x 30 mm ( 0.025 mm per step ) |
| POWER SUPPLY | 90 – 264 Vac ( 50/60Hz ) ( 15 W )  . For the marking head: 24 Vdc |
| PNEUMATIC FEEDER | 7 BAR max ( standard consumption 5NL/1') with dry and not lubricated air |
| DISPLAY | LCD  Backlit ( 2 lines for 40 characters ) |
| KEYBOARD | 60 alphanumeric keys with multifunctions keys |
| OPERATING WAY | AUTONOMOUS or with PC |
| OPERATOR INTERFACE | From Stamper, with preset parameters (Easy to use)<br>From PC, with visualization in Text and Graphic mode. (Other functions are options) |
| MARKING JOBS | TEXT, DATE, SERIAL NUMBERING, DRAWINGS and PLT, PAUSE, CIRCULAR MARKING, PRODUCTION CONTROL |
| METERING SYSTEM | mm , inch , Bar , PSI , MPa |
| MARKING SPEED | 4  Characters/ second  max. (in relation to the parameters) |
| DOTS DISTANCE | Programmable from 0.1 to 2mm  in step of 0.1 mm ( 100 dots / cm ) |
| MEMORY | 512 Kb ( 100 programmable memories) + PC Memory |
| MARKING FORCE | Up to 5KN per dot |
| MULTILANGUAGE | 5 Resident ( DEUTSCH-ENGLISH-FRANCAIS-ESPANOL-ITALIANO ) |
| FONT | 5 resident ( ISO 3098- DIN1451- BLOCK OUTLINE- UNIVERSAL- MATRIX 5X7 (+ 13 options ) |
| I/O STANDARD ( 24 Vdc ) | LOCAL Start, I/O remote, Start, Stop, FM, OK, Cycle |

## MAIN OPTIONS :

**(SEE VERSION SM-110/30-HP/P)**

*Possible use*

## Section 1  "INTRODUCTION"

### 1. A HIGH PERFORMANCE MARKING SYSTEM

The Stamper is a portable system with high quality performances able to work with or without the use of a PC
Standard equipment consists of :

| Mechanic | Electronic box | Power supply | Pneumatic filter |

**THE MARKING HEAD** is made from a holding structure where the step by step motors and the stylus group are assembled. There is also a button on the pistol grip handle with start/stop function. The machine, when is set with REMOTE START = LEVEL, will only work if the button on the handle is pressed; if this button is released during marking the machine will **immediately** stop; when pressing the start button again the machine will first carry out a zero setting and then begin again the marking cycle; thereby making this equipment completely safe to use and manage.
On the marking head there is a power board which controls the motors and the electric valve, interfaced with the low tension power supply.

**ELECTRONIC CONTROL UNIT** is made up of a box which contains the control board, a display having two lines and forty characters and the alphanumeric keyboard with sixty keys. On the left side of the electronic box there is a 9 pin connection for eventual remote or PLC control. On the right side there is a similar connector to interface in a Serial way to a PC.

**COMPUTER** (Option)The Stamper can work also without PC; in this case has the same functionality of Mod. SM-110/30-LC, but with more functions comparing to the standard unit.
When using the PC, the Stamper can have more powerfull functions, like:
- Possibility to store the JOBS into the PC file
- Import of PLT files, for marking logos
- On-line connection to the PC
- Jobs Visualization in Text or Graphic mode
- Graphic emulation of the marking deep
- Using Simet Network Software (OPTION) interface to up to 32 Stampers
- Interface to Systems using Schilling protocol
- Easy possibility to create Graphic interfaces with OCX Program (option)
- Moving a Stamper memory (from PC)to the Stamper Marking Memory Position
- Functions of Copy, Move, Erase of Memory
-

**POWER SUPPLY** is external and feeds energy to the machine, transforming the voltage from **90/264 Vac to 24 Vdc**. The power supply is galvanically isolated between the input and output. The machine can even be supplied with battery power.

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PNEUMATIC FILTER guarantees clean air, removing any eventual impurities which could damage the machine. On the marking head there is a pressure regulator allowing one to regulate the marking pressure. Maximum pressure allowed is 6 bar with **dry and not lubricated air**.

## 2. WORKING PRINCIPLE

The STAMPER is fully managed by a control unity that, through a display and keyboard, allows to program also complex marking cycles.

The program is resident on EPROM; data are stored in a RAM memory, protected by a nickel cadmium battery with 3 months range. The memory can contain up to 100 marking cycles.

The machine is completely autonomous and can or not require the use of an external PC.

Control unit manages 2 step by step motors, moving the stylus inside a working area of 110 x 30 mm with 0,025 mm resolution on both axis. The electrovalve controls the percussion frequency and the marking strength in an electric way on a pneumatic circuit.
The system allows to indent texts, dates, serial numberings and drawings.
Indentings are made by microdots controlled by the electronic box.
The control unit can be remoted, reducing the weight of the machine from 3 to about 2 kilos. In this case it is also suitable for being integrated into automatic lines or to be assembled with column and base for stand-alone application.

## 3. CONFORMS TO EUROPEAN STANDARDS

The various components of this machine have been developed according to conformity rules and in force regulation.
The Manufacturer certifies that all machine parts respect the EEC directives 89/392 and all further modifications.
In the version where the stamper is integrated in automatic lines, it is the Intergrator's duty and obligation to reach necessary security protection of the system.

## Section 2  "INSTALLATION"

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### General notices

The m/c must be used and conform to specifications given by the producer and never for different uses to those specified.

The User is responsible for the correct installation and conformity to the security rules in force.

In case the m/c is not installed correctly or without the appropriate maintenance, the Manufacturer can't be considered responsible for possible breakage, damage to people or objects or malfunction.

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## 1. General rules for installation

The unit has been adjusted and tested in the factory; it isn't necessary to regulate before installation.
Unpack the unit and choose a location for installation, keeping in mind the following directions:
Do not put the unit near sinks or any other places close to water.
Do not install the unit close to radiators.
Do not install the unit close to vibrations; if this is not possible, use the necessary anti-vibration devices.
Install so that the main cable is tangle free.
The air filter must be connected to the m/c at the same scheduled distance.

## 2. Security

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### WARNING

The m/c must correspond with the electric security rules.

Electric security of this m/c is assured only when the system is grounded, it is vital that this element of security is present and efficient.
Taking into account that the ground must support the total power of machine, specified in the data. In case of doubt, contact a qualified technician.
Manufacturer has no responsibility for damages caused to people or objects from the non observance of the rules in the present manual or the lack of connection to earth.

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The m/c has a START button placed on the handle with a security function (this start up button exists in portable model and in portable light model with the remote main box). Pushing the button, the cycle starts, if it is released, the movement and the pneumatic percussion will stop.

The m/c has LEXAN protection panels (OPTIONAL) to increase security, even if not essential to security, can be of pleasure in use.

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## 3. Connections

> **WARNING**
>
> Before turning on the machine, to avoid damages to the electronic parts, it is necessary to make the connection between the power supply and the main box.
> **Never disconnect the m/c from the power supply without turning off the m/c first.**
> It is advised to activate pneumatic air only after electrical connections are made and the workpiece to be marked is in the right position.

## 4. Ground the machine

The Stamper is grounded by the main cable

## 5. Electric connections

Connection of cables has to be done by qualified personnel.
Verify that the plug is connected correctly to the socket.
Use the feeding cable which has an earthed plug.
The power supply is a preset device to function with a wide range of power; the lowest tension is 90 VAC, while the maximum tension is 264 VAC; it has an automatic range(without changing tension); therefore the m/c can function with standard tensions of 115 – 220 – 230 [VAC] and 50-60 [HZ].
Maximum power absorbed 50W.

## 6. Pneumatic connections

When connecting the machine to an industrial socket follow these precautions:
**The air has to be dry and not lubricated.**
The line pressure has to be **MAX 7 bar.**
The average capacity request from the m/c is 5 NL/1'(it can vary in some marking cycles).
Connection with the m/c has to be executed with a diameter tube 8 mm; the tube has to be cut correctly and inserted in the quick connection of the machine and the air filter.
The 8 mm air tube must be no longer than 5 m (to avoid dynamics problems with the m/c).
If pneumatic plant of the factory is not like as described, one will have to add other additional protections to guarantee functionallity of the machine.

**Suggestions for plants not well enough adjusted.**

To improve functionality of the machine when the work cycle is very heavy:
Add a further air filter with better filtering (we advise to use an air filter of 5um with 3000 litres)
Check and clean the filters periodically.
Check and clean the stylus periodically in a dry way (without oil).

## 7. Interface connections

Connect the power supply with the box using the cable supplied, insert connector on the marking head and twist on the metal ring.

## 8. I/O Connector

On the left side of the electronic box (when the operator is keeping the stamper) there is a male connector with 9 pins.
This connector is for connection to a PLC or a PC (or to the optional Remote Control).

```
[PIN] signal       description

1     +24VDC       power supply
2     STOP         Input stop marking signal with GND(normally open)
3     NC           no connection
4     READY        Output OK signal(ready)MAX 200 mA (0 VDC with machine OK)
5     GND          power supply
6     START        Input START marking signal with GND(normally open)
7     FM           Output end marking signal max 200 mA (0 VDC for 500 msec)
8     NC           no connection
9     Cycle        Output end marking signal max 200 mA (0 VDC during the Stylus
                   movement)
```

## 9. I/O Diagram
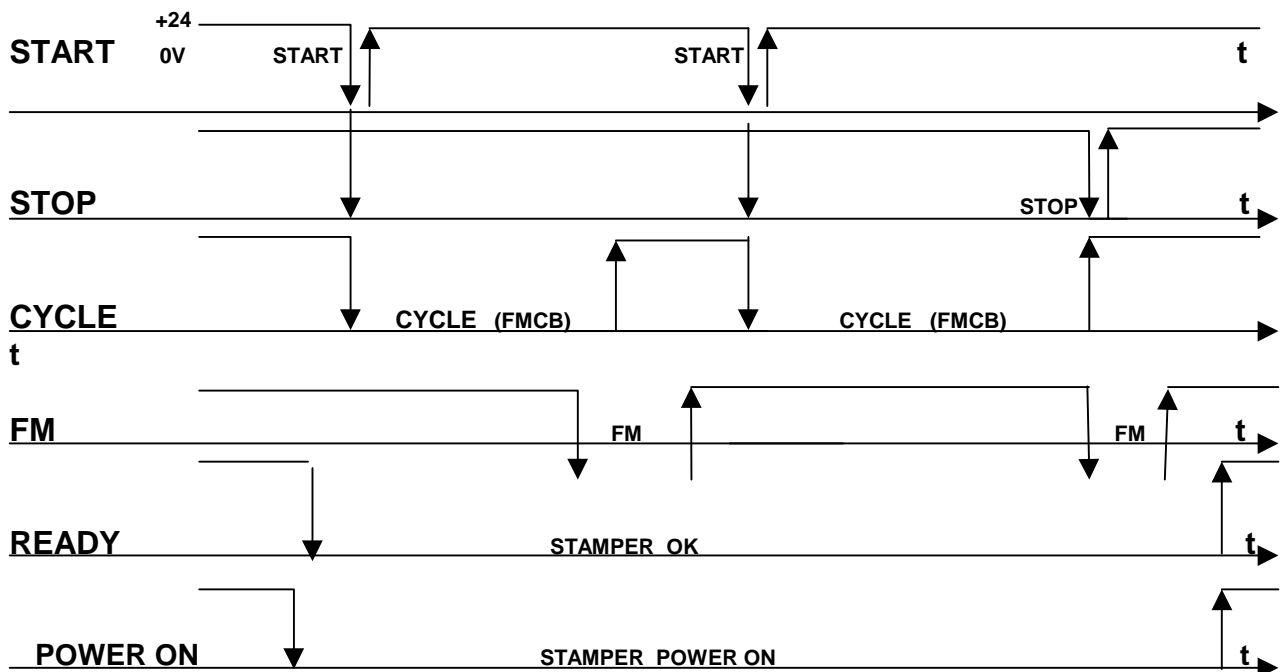


## 10. Stylus installing

The central group (axes Y) of the unit is supplied with a thread hole, in which there is an adfapter (check if the adapter is strongly screwed to the marking head).

**Before installing the stylus kit, check if the stylus moves smoothly in the stylus holder and if it is clean.**

Fit the stylus kit onto the threaded hole and tighten completely.

## 11. Tests for function verification

To be sure the machine has not been damaged during transport, it
 is advisable to make some verifications:
- power supply plug
- connections between power supply and marking head.
- pneumatic connection between air line and air filter
- pneumatic connection between filter and the m/c

Put the pressure regulator in 0 position.

Twist the stylus kit on the unit and be sure that there aren't any obstacles in
the marking area.

Switch on the button on the power supply box(position ON)

Switch on the button on the marking head (position [ON])

Verify that the display is turned on and the stylus is in home position (after
executing a cycle of zero setting, in the case is not already in home
position).

The Display, when switching on the m/c, has to show  "**STAMPER**" and the **FIRMWARE**
release for a few seconds.
Afterwards the machine will be ask for the **PASSWORD**.
Then write **MARC** and push **ENTER**.

Using the key FN select the function MEMORY PROGRAMMING and push ENTER.
Select TEXT using the key ARROW RIGHT and push ENTER.
Then write a text (see chapter 7) and push 2 times the key ENTER.
Fasten the workpiece to be marked and adjust the distance at about 5 mm from
the stylus.
Push the start button: the machine has to do a complete marking cycle without
percussion and then has to return to home position.
Turn the pressure regulator to a **low** value and push the start button.
Machine has to repeat the previous cycle with the percussion of the stylus.

This immediate verification will give the possibility to check if the m/c is
working in the correct way.

Go on in programming the desired jobs

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## 12. Noise

Noise level of the m/c at idling cycle is less than 67 dBA.
The noise increases when marking, depending on the material and the shape of
the workpiece used. It may be necessary for the operator to use protective ear
guards.

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## Section 3  "STAMPER USE"

### 1. Introduction

Correct use of the m/c

Manual operations

Position the item to be marked under the stamper.
Measure the distance between the item and the stylus deciding what depth is required:

- **For deep marking position the stylus at the farest possible point.**
- **For light marking position the stylus at the nearest possible point.**

Do not use elevated pressure if the stylus is marking on pieces with surfaces of an angle over 15 degrees (if using the stylus in this position, flexion can break it).
Before starting, make sure the stylus is fixed and locked correctly.
Clean the stylus periodically.
Do not lubricate the stylus.
Do not lubricate shafts (axis X ,Y)
Sharpen the point/tip of the stylus using a diamond grinding wheel when it is blunt or when you need a different ray from the standard.

**Standard needles are: 90 degrees with radius 0.5 mm and 60 degrees with radius 0.3 mm**

**ATTENTION:** - never sharpen with a ray less than 0.2 mm to avoid breakage or splintering.

**When marking on hard or medium hard materials use needles with an angle of 90 degrees and a point with a ray of 0.5 mm.**
**When indenting thin lines use an angle of 60 degrees and a point with a ray of 0.3 mm.**

The m/c can mark on hardened metals up to 63 HRC.

**To obtain deep marking:**

- Increase distance between the piece and the stylus (about 12-14 mm)
- Increase pressure (6-7 bar)
- Increase PWM (about 30)
- Reduce distance between points (0.1 mm)
- Increase the upstroke time of the needle (15 msec)

**To obtain high quality marking:**

- Reduce the distance between piece and stylus (about 1 mm)
- Reduce the stylus speed movement. (50)
- Reduce distance between points. (0.2 mm)
- Reduce the marking pressure.
- Reduce the upstroke time. (10 msec)

**For fast marking:**

- Reduce the distance between the piece and stylus (2-3 mm)
- Increase the stylus speed movement. (99)
- Increase distance between. (Variable in relation to the character heigth)
- Decrease stylus upstroke time. (10 msec)
- Select the 7x5 MATRIX font (better than other fonts)

A compromise between speed, depth and quality can be achieved following the above suggestions.

## Pneumatic operations

Assure that the compressed air is not damp
Periodically clean the air filter.

**Marking depth is proportional to pressure.**
For deep marking max pressure (6 - 7 bar).
For light marking the pressure must be at least (1 bar).
The air pressure can be modified during marking.

**Fine Marking depth adjustment can be achieved using the PWM.**
Increasing the PWM (Ex, 30) = Increase the marking power.
Decreasing the PWM (Ex, 12) = Decrease the marking power.

The PWM makes a power marking regulation which acts directly on the opening time of the electrovalve.
The PWM corresponds to a time that is programmed as DEFAULT and it can be modified in percentages using the arrows keys (UP and DOWN).
**The PWM value must be modified properly and with great care because any mistakes can compromise the marking quality and the machine.**

To avoid mistakes when using PWM remember that:

The PWM value must be lower than the time taken by the stylus to reach the piece during each stroke; so be careful to set at high PWM value. Without following the previous instructions:- you risk tripping the movement of the axis (x y) with motor steps losing and bad marking.

**If you do not become familiar with this type of adjustment it is preferable to keep always the default value PWM = 15**

**N.B. when, during marking, there is a constant vibrating noise, the machine is regulated correctly**

## Electrical operations

All cables and connectors must be handled with care.
Before turning on the machine check if the electrical tension is correct.
The connection must be grounded.

## Marking area

The marking area is 110 mm (4.330″) on the X axis (horizontal) and 30 mm (1.181″) on the y axis (vertical) with a step resolution on both axis of 0,025 mm.
The stylus' home position is at the top left hand corner.
The 0 electric's (0 CAD's) position is at the bottom left hand corner.

## 2. Operator Interface

The m/c has been made with the maximum simplicity, therefore can be operated by a non expert.

The machine can perform complex marking without the need of a PC, and it can operate completely alone.

The display screen LCD, is back-lighted and has 2 lines with 40 characters. The input of data is executed via the keyboard.

The operator's interface is well-developed, so programming the m/c is simple. There is no need for an instruction list, because all instructions are available by pressing the **FN** key.

**Programming means to produce a JOB**
**The JOB is made up of a series of STEPS**
**The STEPS can be text, date, serial numbering, drawings, pause.**

Principal keys for machine functions:

| Key abbreviation | Function key description |
|---|---|
| **[FN]** | Machine functions selector |
| **[ENTER]** | Confirms functions in course |
| **[ESC]** | Cancels functions in course |
| **[A>] - [<A]** | Right and left **heavy-type arrow**, advances and returns |
| **[A up] - [A down]** | Up and down **heavy-type arrow**, select sub functions |
| **[>] – [<]** | Page jump |
| **[SPACE]** | Moves cursor one step |
| **[<-]** | Moves and deletes 1 character ([BCK]) |
| **[**A up**]** | Up arrow Capital/Small letter |

## 3. Definition of DEFAULT parameters

```
DESCRIPTION                    RANGE                   DEFAULT VALUES

SIZE [CHAR]
H= Height [CHAR]               = 0.15 – 30 mm          (5)
W= Width  [CHAR]               = 30 – 400%             (100)
D= Distance between [CHAR]     = 30 – 400%             (100)
S= Slant [CHAR]                = 45 – 135°             (90)
DIR= Direction [CHAR.]         = 0 – 359°              (0)
PosX= Position [X]             = 0 – 110 mm            (3)
PosY= Position [Y]             = 0 – 30 mm             (24)


NEEDLE
DOTS D. = Dots distance        = 0.025 – 5 mm          (0.4)
UPSTROKE TIME                  = 1 - 30 msec           (10)
PRESS= Pressure                = 0 – 6 bar             (?)
PWM                            = 00 – 99%              (15)
                               Corresponding time 1-11 msec
DIST= Needle distance          = ? mm                  (?)


SPEED
MOVING= Moving speed           = 00 – 99%              (99)
ZERO= Zeroing speed            = 00 – 99%              (40)
FONT                           = ISO 3098/I, DIN 1451, TECTONA,
                               BLOCK OUTLINE, SCRIPT
JUST= Justification            = right, centre, left(right)
REPEAT= Number of Repetition   = 0 - 9                 (0)
DX= Repetition axis X          = 0 – 1 mm              (0)
DY= Repetition axis Y          = 0 – 1 mm              (0)
MIRROR= MIRRORING
X= Mirror effect [X]           = yes, no               (NO)
Y= Mirror effect [Y]           = yes, no               (NO)
DIST= Type of [DISTANCE]       = STANDARD (in columns), PROPORT. (no
                               columns)                (Standard)
LANG= Language                 = Deutsch, English, Francais, Espanol,
                               Italian                 (Italian)


KEYS
CONT=                          = SING,CONT
BUZZER (Keyboard)              = yes, no               (YES)
UNIT OF MEASURE                = mm, inch              (mm)
PRESSURE [UNIT]                = BAR, PSI, KPA         (bar)
END MARKING TIME               =20 – 5000 msec         (500)
REMOTE START                   = level, variation      (Variation)
LATCH START (REM)              = yes, no               (NO)

MAX No.[Counter digit]         = 7                     (4)
```

## 4. Date format

The m/c has the following date formats: (suitable by UP and DOWN keys when the cursor is lightening on FORMAT field)

```
- [DDMMYY]          =  day – month – year;
- [MMDDYY]          =  month – day – year;
- [YYMMDD]          =  year – month – day;
- [YYDDMM]          =  year – day – month;
- [DDMMYYYY ]       =  day – month and entire year;
- [MMDDYYYY ]       =  month – day and entire year;
- [YYYYMMDD ]       =  entire year and month – day;
- [YYYYDDMM ]       =  entire year and day – month;
- [Y]               =  last number Year;
- [YY ]             =  last 2 numbers year;
- [YYYY]            =  year;
- [HHMM24]          = hours and minutes in 24 hours;
- [HHMM12]          = hours and minutes in 12 hours;
- [HHMM12AP]        = hours and minutes in 12 hours with indication [AM] [PM]
                        written after hours and minutes;
- [AP12HHMM]        = hours and minutes in 12 hours with indication [AM] [PM]
                        written before hours and minutes;
- [DD]              = day of current month;
- [MM]              = express months from 1 to 12(1=January, 2= February, [ECC])
- [M]               = express months in letters(A= January, B= February, [ECC])
```

Move the cursor by Dx and Sx keys to "DATE" and press ENTER, the display shows the current date. It is also possible to select the type of separator to use between day, month and year (ex. **/** or **–** or **+** etc.).

## 5. Serial Numbering

The counters are programmable only for marking. They increase or decrease by one unit at a time only if the JOB has been completed correctly, without interruptions.
In every counter is possible decide:
-   serial numbering direction(forward = increase; backwards = decrease).
-   length area (from 1 to 7 digits).  ex.   9999999
-   Filled in character: blank(no character); zero(0); treat(-).
  (Ex. You can write the number 3 in the following ways: 3 ; 003 ; --3).

## 6. Drawing

The m/c can mark a few simple geometric figures. Select the "DRAW" STEP and press ENTER; moving the slider by UP and DOWN keys it is possible to choose:

b.1 absolute segment;
b.2 absolute line;
b.3 relative line;
b.4 square;
b.5 rectangle;
b.6 rectangle triangle;
b.7 isosceles triangle;
b.8 clockwise arc;
b.9 anticlockwise arc;
b.10 centre arc;
b.11 circulating sector;
b.12 circle;
b.13 ellipse;
b.14 oval;
b.15 parallelogram;

## 7. Keys definition

- **Arrow [DX]**
  this confirms the parameter actually in programming (where the slider flashes) + shifting to the following parameter with possible page change)
- **Arrow [SX]**
  (as slider DX + shifting to the previous parameter)
- **Arrow [UP]**
  It scrolls in the forward way the list of possible parameters, or increase them of 1 digit
- **Arrow [DW]**
  It scrolls in backward way the list of possible parameters, or decrease them of 1 digit
- **Key [>]**
  this jumps to following page of the main [MENU]; sliding up and down pages is cyclic, done automatically from the last to the first page.
- **Key [BCK]**
  this annuls parameter actually in programming(where the slider flashes) and re-proposes the earlier parameter; the cursor remains flashing on the same parameter in wait of new programming or confirmation of some parameter.
- **Key [ENTER]**
  in any position of the [MENU] of confirmation programming parameter actually in programming (where the cursor flashes) and terminates the [MENU] of programming returning to start message, confirming all parameters of the [MENU]; in case of programming a [STEP] of a [JOB], with key [ENTER] the introduction of the STEP on the JOB is confirmed with all relative parameters( including those which have never been modified and therefore they have remained to value of [DEFAULT]).
- **Key [ESC]**
  this key, on any position of the [MENU] of programming, cancels parameter actually in programming(as key [BCK]) and terminates the [MENU] of programming discarding the whole effected programming; in case of programming of a [STEP] of a [JOB], the [STEP] is completely discarded and will <u>not</u> be memorised.
- **Keys NUMERICAL [0-9]**
  used in cases of programming of numerical parameters and in programming the text to be marked

- **Key FULL STOP [.]**

used in the case of programming of decimal parameters, numerical and in programming the text to be marked.
- **Key [Space]**
  used in programming of alphabetical parameters, and for example as a space bar, as a separator.
– **Keys ALPHABETICAL([A-Z]**
  used in the programming of alphabetical parameters.
- **Keys [U]** and **[A]** with accented letters (**umlaut = two points up**)
  used in the programming of textual and marking contents.
- **Key [SHIFT]**
  TOGGLE selection of type of text Capital and lower case letters. By default this always starts in lower case letters.
- **Key [FN]**
  (functions). Each time this key is touched all menus can be seen.
  [ESC] returns to main page.
– **Key [CTRL]** CONTROL:
  You can use as alternative to the FN key,
  **CTRL + Q** MEMORY PROGRAMMING
  **CTRL + W** MEMORY MANAGEMENT
  **CTRL + E** MEMORY VISUALIZATION
  **CTRL + R** PRODUCTION MANAGEMENT (option)
  **CTRL + T** DEFAULT PARAMETERS
  **CTRL + Y** PASSWORD MANAGEMENT
  **CTRL + U** DIAGNOSTIC
– **Key [Alt]**
  Pushing this key you can disable the air pressure. It is used to see the writing position without marking. Pushing it again the air pressure is activated.

## 8. START and STOP commands

| MODE | Local Start | Remote Start | Remote Stop |
|------|-------------|--------------|-------------|
| | | | |
| LEVEL | The cycle starts when pulling the trigger and stops immediately when releasing it.<br><br>The full cycle is executed keeping the trigger pulled up to the end.<br><br>Keeping the trigger pulled for more of 3 seconds after the end, the cycle restarts immediately. Opposite if it is released after the cycle, the stamper is waiting for the next pulling. | The cycle starts when pushing the button and stops at the end of the job.<br><br>The cycle stops immediately with a remote Stop | It stops immediately the cycle. |
| VARIATION | The cycle starts when pulling the trigger, and stops only at the end of the Job.<br><br>With a remote Stop the | The cycle starts when pushing the button and stops at the end of the Job.<br><br>With a remoted Stop the cycle is immediately | It stops immediately the cycle. |

| | | | |
|---|---|---|---|
| | cycle is resetted. | stopped. | |
| MEMORY | The cycle starts when pulling and stops at the end keeping the trigger pulled.<br><br>If you realise the trigger during the Job, the cycle stops at the end of the last executing vector; repulling it, the cycle starts from the next vector after the stop.<br><br>With a remote Stop the cycle is resetted | The cycle starts when pushing the button and stops at the end of the Job.<br><br>When a Stop arrives, the cycle stops at the end of the executing vector. An other Stop resets the cycle.<br><br>A Start after the firs Stop restarts the memory, starting from the following vector. | A Stop during the Job stops the cycle at the end of the executing vector; an other Stop resets the cycle. |

## 9. Marking positioning

All markings are positioned by a reference point with **X** and **Y** coordinates.
The marking position can be RIGHT, CENTERED or LEFT with reference to the **XY** point.
Using the **AUTO** function, the positioning can be automatic. This means that is possible to follow a step immediately after another one already programmed, without proceed by attempts.
This function is enabled with **X**, **Y** and **XY** positions and both with **STANDARD** and **PROPORTIONAL** spacing.

## 10. INPUT / OUTPUT Definition

Outputs are OPEN COLLECTOR with feeding at 24VDC and are NPN type. They aren't isolated galvanically by the control logic.
**List of available OUTPUTS:**
- **Output Cycle**. It remains activated for the whole time of execution of the cycle from the [START] until the return home position.
- **Output End Cycle**. It activates itself for execution of the last point of engraving; remains activates for scheduled time.
- **Output Stamper O.K. [READY].** It is always activated when the machine hasn't found any errors. It activates itself at switching on, after the zero setting, if the zero setting is correct.
The zero will be executed NON INTERPOLATE when:
- there is a second [STOP] in the engraving cycle
- the zero checking find an error at the end of a cycle doing the zero setting position
The machine will be reset only if the zero setting won't have a positive result.

## 11. SERIAL INTERFACE TO PC

The SM-110/30-HP Stampers are equipped with a 9 PIN connector for serial
connection to PC. The interface is RS232 with HP-GL compatible protocol to
import files under .PLT format and for ASCII commands for other functions.

| SM-110/30-HP | POSSIBLE CONNECTIONS TO SM-110/30-HP STAMPERS |
|---|---|

## STANDARD CONNECTION



*RS 232 ( 5 Meters standard ) max 14 meters*    **1**

## CONNECTION TO A REMOTE PC



*PC*      *BOX 232/485*      *LINE RS 485*      *BOX 232/485*      *SM-110/30-HP*

**Max distance 1Km**
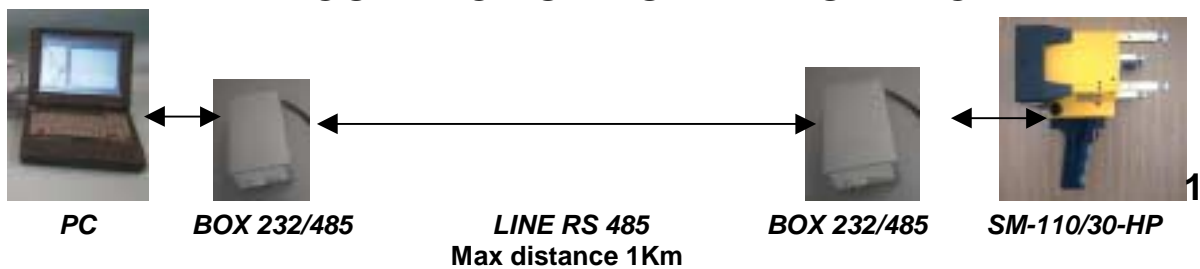
## CONNECTION TO SCHILLING NETWORK  (32 STAMPERS MAX.)



*PC*      *BOX 232/485*      *LINE RS 485*      *BOX 232/485*      *SM-110/30-HP*    **1**

*(OPTION firmware + software)*      *BOX 232/485*      *SM-110/30-HP*    **2**

*BOX 232/485*      *SM-110/30-HP*    **32**
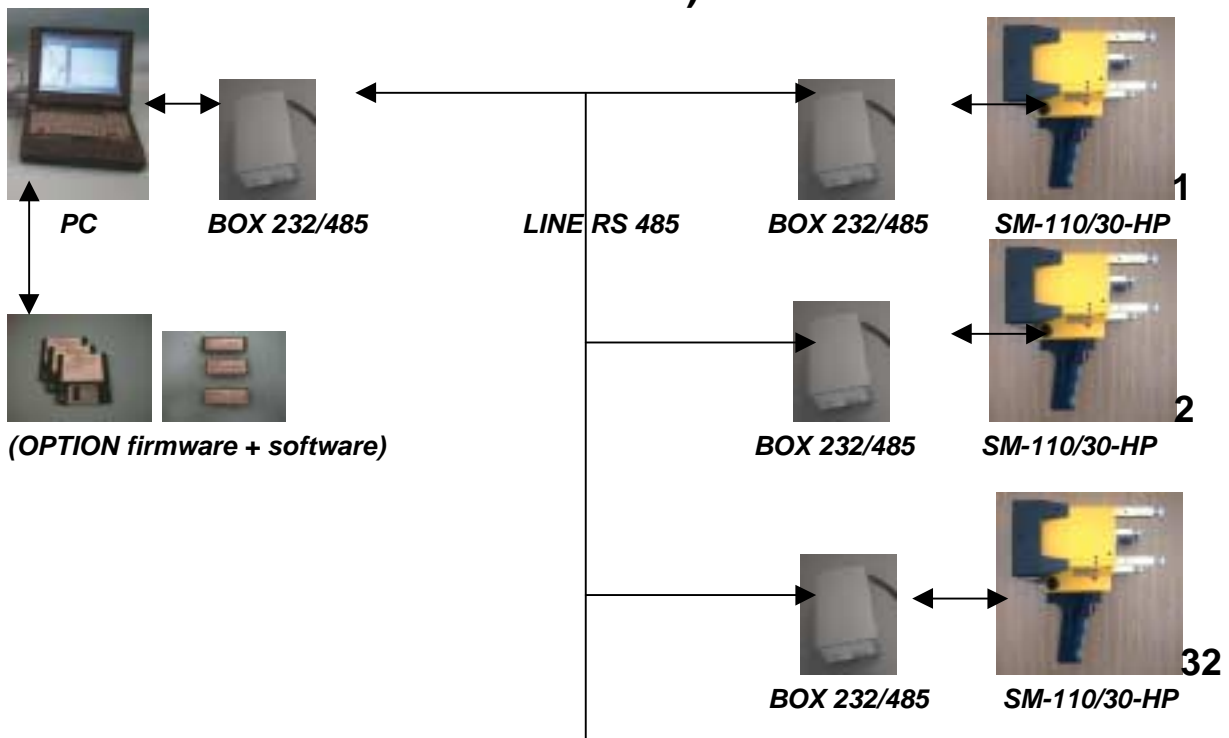
## 12. OPERATOR INTERFACE FOR SM-110/30-HP

# *POWER ON*

### SWITCH-ON THE STAMPER



### VISUALIZATION FOR ABOUT 3 SEC.



### INSERT PASSWORD
**MARC        = PROGRAMMER**
**JOB          = OPERATOR**
**MP456      = DIRECT READING**



### Push ENTER

# FUNCTIONS IN MAIN MENU ( FN )

**MEMORY PROGRAMMING**
**MEMORY MANAGEMENT**
**MEMORY VISUALIZATION**
**PRODUCTION CONTROL**
**DEFAULT PARAMETERS**
**PASSWORD MANAGEMENT**
**DIAGNOSTIC FUNCTIONS**

# DEFAULT PARAMETERS

| | | |
|---|---|---|
| FIRST SCREEN | CHARACTER HEIGHT | = 5mm |
| | CHARACTER WIDTH | = 100% |
| | CHARACTERS DISTANCE | = 100% |
| | CHARACTER SLANT | = 90 DEGREES |
| | WRITING DIRECTION | = 0 DEGREES (HORIZONTAL) |
| | X AXIS POSITION | = 3 mm |
| | Y AXIS POSITION | = 24mm |
| SECOND SCREEN | DOTS DISTANCE | = 0,4 mm |
| | (NEEDLE) UPSTROKE TIME | = 10msec |
| | REMARKS ABOUT PRESSURE | = 0,0 |
| | REMARKS ABOUT PWM | = 15 |
| | REMARKS ABOUT DISTANCE | = 10 mm |
| SECOND SCREEN | (NEEDLE) MOVING SPEED | = 99% |
| | FONT | = ISO 3098/1 |
| | JUSTIFICATION | = RIGHT |
| THIRD SCREEN | NUMBER OF REPETITIONS | = 1 |
| | DELTA X | = 0,0 |
| | DELTA Y | = 0,0 |
| | MIRRORING X | = NO |
| | MIRRORING Y | = NO |
| | CHARACTERS DISTANCE | = PROPORTIONAL |
| FOURTH SCREEN | LANGUAGE | = ITALIANO |
| | KEYS | = CONTINOUS |
| | DISTANCE METERING UNIT | = mm |
| | PRESSURE METERING UNIT | = BAR |
| FIFTH SCREEN | END MARKING TIME | = 500 msec |
| | START | = VARIATION |
| SIXTH SCREEN | HOUR | = |
| | DATE | = |
| | DAY | = |
| SEVENTH SCREEN | STAMPER No. | = 1 |
| | BAUD-RATE | = 19200 |

**MEMORY PROGRAMMING**

# *"TEXT" STEP*

FIRST SCREEN

| | | | | |
|---|---|---|---|---|
| STEP No. | = 0 | INSERT | PWM=15 | BAR=0,0 |
| TEXT | enter | | | |
| TEXT | (WRITE THE TEXT) | =ENTER | | |

SECOND SCREEN

| | |
|---|---|
| CHARACTER HEIGHT | = 5mm |
| CHARACTER WIDTH | = 100% |
| CHARACTER DISTANCE | = 100% |
| CHARACTER SLANT | = 90 DEGREES |
| WRITING DIRECTION | = 0 DEGREES (HORIZONTAL) |
| X AXIS POSITION | = 3 mm |
| Y AXIS POSITION | = 24mm |

THIRD SCREEN

| | |
|---|---|
| DOTS DISTANCE | = 0,4 mm |
| (NEEDLE) UPSTROKE TIME | = 10msec |
| REMARKS ABOUT PRESSURE | = 0,0 |
| REMARKS ABOUT PWM | = 15 |
| REMARKS ABOUT DISTANCE | = 10 mm |

FOURTH SCREEN

| | |
|---|---|
| (NEEDLE) MOVING SPEED | = 99% |
| FONT | = ISO 3098/1 |
| JUSTIFICATION | = RIGHT |

FIFTH SCREEN

| | |
|---|---|
| NUMBER OF REPETITIONS | = 1 |
| DELTA X | = 0,0 |
| DELTA Y | = 0,0 |
| MIRRORING  X | = NO |
| MIRRORING  Y | = NO |
| CHARACTERS DISTANCE | = PROPORTIONAL |

SIXTH SCREEN

| | | | | |
|---|---|---|---|---|
| STEP Nr. | = 1 | INSERT | PWM=15 | BAR=0,0 |
| TEXT | enter | | | |
| TEXT | (WRITE THE TEXT) | =ENTER | | |

**GO AHEAD IN PROGRAMMING IN RELATION TO THE MARKING NEEDS**

**NOTE:**          **IT IS NOT NECESSARY TO COMPLETE THE PROGRAMMING SEQUENCE. IT IS POSSIBLE TO EXIT (BY ENTER) WHEN OTHER DEFAULT PARAMETERS ARE NOT TO BE MODIFIED.**

**MEMORY PROGRAMMING**

# *"DATE" STEP*

**FIRST SCREEN**

| | | | | | |
|---|---|---|---|---|---|
| STEP Nr. | | = 0 | INSERT | PWM=15 | BAR=0,0 |
| DATE | | enter | | | |
| DATE | | (select the format required) | | =ENTER | |

**SECOND SCREEN**

| | |
|---|---|
| CHARACTER HEIGHT | = 5mm |
| CHARACTER WIDTH | = 100% |
| CHARACTER DISTANCE | = 100% |
| CHARACTER SLANT | = 90 DEGREES |
| WRITING DIRECTION | = 0 DEGREES (HORIZONTAL) |
| X AXIS POSITION | = 3 mm |
| Y AXIS POSITION | = 24mm |

**THIRD SCREEN**

| | |
|---|---|
| DOTS DISTANCE | = 0,4 mm |
| (NEEDLE) UPSTROKE TIME | = 10msec |
| REMARKS ABOUT PRESSURE | = 0,0 |
| REMARKS ABOUT PWM | = 15 |
| REMARKS ABOUT DISTANCE | = 10 mm |

**FOURTH SCREEN**

| | |
|---|---|
| (NEEDLE) MOVING SPEED | = 99% |
| FONT | = ISO 3098/1 |
| JUSTIFICATION | = RIGHT |

**FIFTH SCREEN**

| | |
|---|---|
| NUMBER OF REPETITIONS | = 1 |
| DELTA X | = 0,0 |
| DELTA Y | = 0,0 |
| MIRRORING  X | = NO |
| MIRRORING  Y | = NO |
| CHARACTERS DISTANCE | = PROPORTIONAL |

**SIXTH SCREEN**

| | | | | | |
|---|---|---|---|---|---|
| STEP Nr. | | = 1 | INSERT | PWM=15 | BAR=0,0 |
| DATE | | enter | | | |
| DATE | | (WRITE THE DESIRED FORMAT) | | =ENTER | |

**GO AHEAD IN PROGRAMMING IN RELATION TO THE MARKING NEEDS**

**NOTE:**            **IT IS NOT NECESSARY TO COMPLETE THE PROGRAMMING SEQUENCE. IT IS POSSIBLE TO EXIT (BY ENTER) WHEN OTHER DEFAULT PARAMETERS ARE NOT TO BE MODIFIED.**

**MEMORY PROGRAMMING**

# *"SERIALIZATION" STEP*

**FIRST SCREEN**

| | | | | |
|---|---|---|---|---|
| STEP Nr. | = 0 | INSERT | PWM=15 | BAR=0,0 |
| NUMBERING | enter | | | |
| NUMBERING | (WRITE THE DESIRED PROGRAMMING) = ENTER | | | |

**SECOND SCREEN**

CHARACTER HEIGHT = 5mm
CHARACTER WIDTH = 100%
CHARACTER DISTANCE = 100%
CHARACTER SLANT = 90 DEGREES
WRITING DIRECTION = 0 DEGREES (HORIZONTAL)
X AXIS POSITION = 3 mm
Y AXIS POSITION = 24mm

**THIRD SCREEN**

DOTS DISTANCE = 0,4 mm
(NEEDLE) UPSTROKE TIME = 10msec
REMARKS ABOUT PRESSURE = 0,0
REMARKS ABOUT PWM = 15
REMARKS ABOUT DISTANCE = 10 mm

**FOURTH SCREEN**

(NEEDLE) MOVING SPEED. = 99%
FONT = ISO 3098/1
JUSTIFICATION = RIGHT

**FIFTH SCREEN**

NUMBER OF REPETITIONS = 1
DELTA X = 0,0
DELTA Y = 0,0
MIRRORING X = NO
MIRRORING Y = NO
CHARACTERS DISTANCE = PROPORTIONAL

**GO AHEAD IN PROGRAMMING IN RELATION TO THE MARKING NEEDS**

**NOTE:** **IT IS NOT NECESSARY TO COMPLETE THE PROGRAMMING SEQUENCE. IT IS POSSIBLE TO EXIT (BY ENTER) WHEN OTHER DEFAULT PARAMETERS ARE NOT TO BE MODIFIED.**

**User Manual**

**SM-110/30-HP**

MEMORY PROGRAMMING

# *"DRAWING" STEP*

| FIRST SCREEN | STEP Nr. | = 0 | INSERT | PWM=15 | BAR=0,0 |
|---|---|---|---|---|---|

DRAWING      enter

TYPE OF DRAWING (INSERT THE DESIRED PROGRAMMING) = ENTER

**SECOND SCREEN**

ABSOLUTE SEGMENT
MARK      = YES
LENGTH      = 0,0mm
SLANT      = 0,0

**THIRD SCREEN**

X POSITION      = 3 mm
Y POSITION      = 24 mm

**GO AHEAD IN PROGRAMMING IN RELATION TO THE MARKING NEEDS**

**NOTE:**      **IT IS NOT NECESSARY TO COMPLETE THE PROGRAMMING SEQUENCE. IT IS POSSIBLE TO EXIT (BY ENTER) WHEN OTHER DEFAULT PARAMETERS ARE NOT TO BE MODIFIED.**

MEMORY PROGRAMMING

# *"PAUSE" STEP*

**FIRST SCREEN**      STEP Nr.      = 0      INSERT      PWM=15      BAR=0,0

PAUSE      enter

TYPE OF PAUSE      (Select the desired Pause)      =ENTER

**SECOND SCREEN**

TYPE OF PAUSE      = TIME
TIME      = 10 sec.

**GO AHEAD IN PROGRAMMING IN RELATION TO THE MARKING NEEDS**

**NOTE:**      **IT IS NOT NECESSARY TO COMPLETE THE PROGRAMMING SEQUENCE. IT IS POSSIBLE TO EXIT (BY ENTER) WHEN OTHER DEFAULT PARAMETERS ARE NOT TO BE MODIFIED.**

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# MEMORY MANAGEMENT

| FIRST SCREEN | MEMORY Nr. | = 1 |
| | NAME | = |
| | SELECT | = SAVE – LOAD – ERASE - MODIFY |

# MEMORY VISUALIZATION

| FIRST SCREEN | MEMORY Nr. | = 1 |
| | NAME | = |
| | STEP Nr. 1 | = To visualize the contents of the Step |
| | STEP Nr. 2 | = To visualize the contents of the Step |
| | STEP Nr. 3 | = To visualize the contents of the Step |

# PRODUCTION CONTROL

| FIRST SCREEN | CYCLE No. | = 0 |
| | MODE | = INSERT |
| | P. C. ENABLE | = YES |

| SECOND SCREEN | MEMORY No. | = 12 |
| | NAME OF MEMORY | = |
| | P. C. ENABLE | = YES |

| | NUMBER OF REPETITIONS | = |
| THIRD SCREEN | CYCLE No. | = 1 |
| | MODE | = INSERT |
| | P. C. ENABLE | = YES |

| FOURTH SCREEN | MEMORY No. | = |
| | MEMORY NAME | = |
| | P. C. ENABLE | = YES |
| | NUMBER OF REPETITIONS | = |

**GO AHEAD IN PROGRAMMING IN RELATION TO THE MARKING NEEDS**

**NOTE:** **IT IS NOT NECESSARY TO COMPLETE THE PROGRAMMING SEQUENCE. IT IS POSSIBLE TO EXIT (BY ENTER) WHEN OTHER DEFAULT PARAMETERS ARE NOT TO BE MODIFIED.**

# *PASSWORD PROGRAMMING*
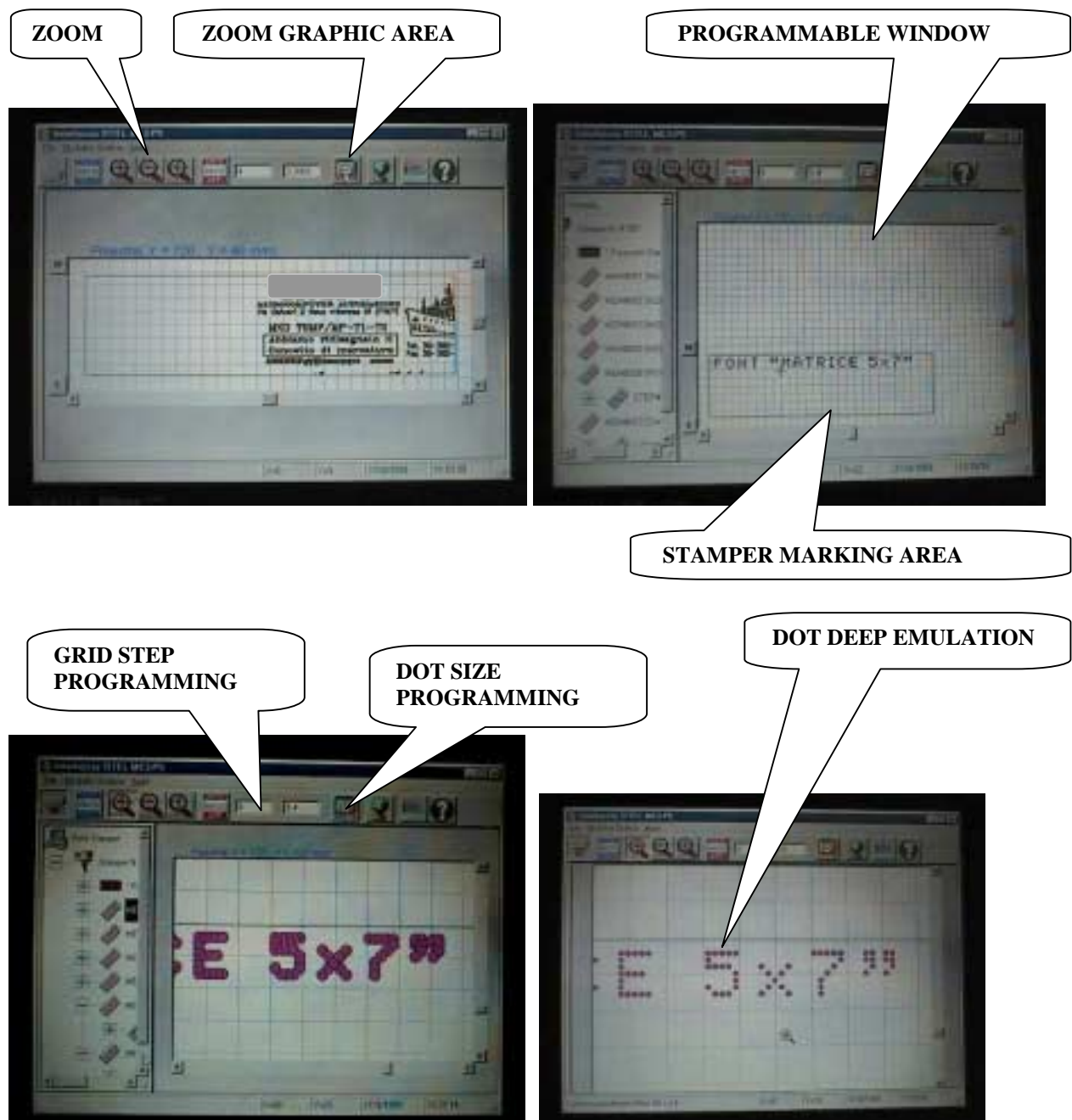
FIRST SCREEN     PASSWORD ENABLE     = YES
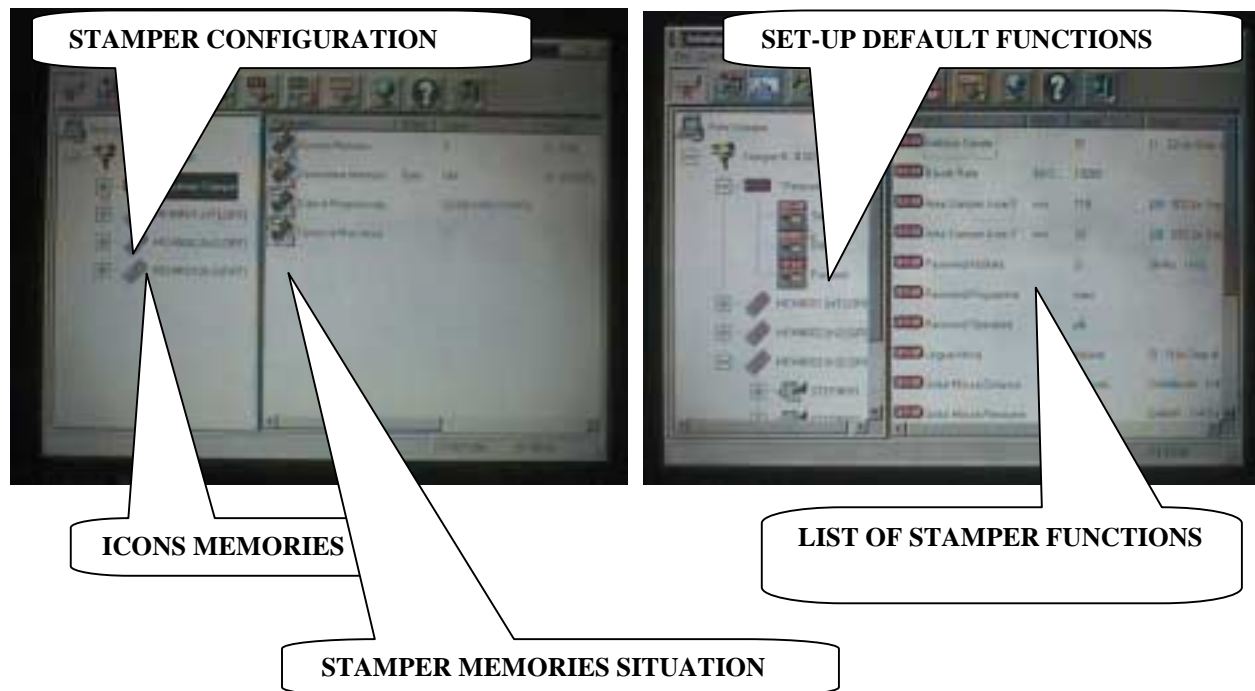PASSWORD PROGRAMMER     = MARC
PASSWORD OPERATOR     = JOB

# *DIAGNOSTIC FUNCTIONS*

FIRST SCREEN     DIAGNOSTIC FUNCTIONS
DISPLAY
KEYBOARD
INPUT/OUTPUT
AREA TEST
DRAWING TEST
SERIAL TEST

![Schilling Marking Systems GmbH logo]

# GRAPHIC INTERFACE PROGRAM
# FOR STAMPERS SERIES SM-110/30-HP

MAIN MENU ICON

ICON TO START PROGRAM

Mk3P5.exe

TEXT MODE

GRAPHIC MODE

FILE MANAGER

DATA AREA

GRAPHIC AREA

" PC CONNECTION " FUNCTION

" FILE " FUNCTION

ZOOM

ZOOM GRAPHIC AREA

PROGRAMMABLE WINDOW

STAMPER MARKING AREA

GRID STEP PROGRAMMING

DOT SIZE PROGRAMMING

DOT DEEP EMULATION

STAMPER CONFIGURATION

SET-UP DEFAULT FUNCTIONS

ICONS MEMORIES

LIST OF STAMPER FUNCTIONS

STAMPER MEMORIES SITUATION

# Section 4  "PRACTICAL INSTRUCTIONS FOR JOBS PROGRAMMING"

**PREMISE**

*For easier understanding, please note that there are some keys particularly important:*

**FN**          *It allows to  select either the main functions (such as MEMORY PROGRAMMING, MEMORY MANAGEMENT and MEMORY VISUALIZATION) and service functions (such as DEFAULT PARAMETERS, PASSWORD MANAGEMENT and DIAGNOSTIC FUNCTIONS)*

**ARROWS**   *Keys        (FORWARDS) and         (BACKWARDS) make the slider moving sideways to select parameters and functions. By keys (UP) and (DOWN) you choose one of the possible solutions proposed for the position already selected by said arrows, or proposed numerical values may be increased or decreased.*

**ENTER**      *It confirms the desired choice.*

*In the machine there are two memories.*
* *The zero memory, to program and modify the marking cycle with the various texts and parameters*
* *The filing memory, to store the different marking cycles (for a total of 100 cycles for a max. of 512 Kb) performed in memory zero.*

*The word STEP identifies any single job making up the complete marking cycle.*
*STEP may be a TEXT, a DATE, a NUMB (serial numbering) and* <u>*option*</u> *a DRAW or a PAUSE.*

## 1. TURNING THE STAMPER ON

*First make electrical connection.*
**Before** *switch on the power feeder and* **then** *the marking head.*

*It is recommended that the cable Marking Head/Feeder* **is never disconnected** *when the feeder is switched on.*

When turning the machine on, it is necessary to enter the PASSWORD, which is available on three levels:

MARC (programmable) enabling all operations
JOB          (programmable) allowing to load only a job already stored, taking it from the
                 100 available memories.
MP456      (not programmable) to be used when the programmed password has been
                 forgotten

After the password MARC has been entered to select the desired language depress key FN four times to be in DEFAULT PARAMETERS and confirm using ENTER key. Then depress 4 times key until the slider is located on the word LINGUA or LANG. Now choose the desired language by the key (ARROW DOWN) and confirm by ENTER.

## 2. PROGRAMMING A JOB

To start setting a job, depress once key FN and  enter the menu MEMORY PROGRAMMING. Confirm by ENTER key.
The slider is blinking on the word INSERT. Depressing key (ARROW UP) or (ARROW DOWN) it is possible to choose CLEAR, ERASE or MODIFY (only if at least one step is already inserted).

If the STEP is equal to 0, the zero memory is empty and you can begin to put your text together, confirming INSERT by ENTER.
If this is not the case, you have to clear all the STEPS in the memory, selecting by (ARROW DOWN) the word CLEAR and confirming by ENTER.
Confirm the function INSERT by key ENTER and choose, for instance, a *linea*r TEXT and confirm by ENTER.
If the stamper has the optional function *circular marking*, after the word TEXT, DATE and NUMB both an arrow and a bracket **)** appear. Selecting the arrow, you obtain linear marking, selecting the bracket by the key (ARROW FORWARDS) you obtain circular marking.
Then digit the desired text.
Remember that the (SMALL ARROW UP) on the left side of the keyboard allows to select CAPITALS, and the letter **M** appears on the top left side of display, or lower-case and the letter **m** appears in the same position.
Once the text has been finished, confirm by ENTER.

Now the following parameters are proposed as Default by the machine, for character size (SIZE):
H (Height) = 5 mm,  W (Width) = 100%,  D (space between characters) = 100%
S (slant) = 90,  DIR (direction) = 0,  PosX = 3 mm and PosY = 24 mm  (co-ordinates of  the writing starting point),
while the slider is blinking on PosX.

Keeping in mind that the marking area is X=110 mm and Y=30 mm and the electrical ZERO (0,0) is down on the left and the mechanic ZERO is above on the left (X=0, Y=30), the desired coordinates can be entered depressing the corresponding keys on the keyboard and changing from PosX to PosY using the key      (ARROW FORWARDS).
Always using this arrow, you go to the subsequent screen, where job parameters are set.

Now the DOTS.DIST (distance between dots) has to be set, in order to obtain more or less dots density
We suggest now to keep the default data either for DOTS.DIST = 0.4 mm and for UPSTROKE TIME (of needle) = 10 msec.

Then the default values of parameters are shown PWM=15 (proportional to the opening time of the electrovalve) and DIST=10 mm (*suggested* distance between piece to be marked and needle). These values will then be replaced by those set, once the best working conditions have been found for that specific job (by attempts). Their purpose is therefore not to have making attempts every time.

At this point, we do not suggest to go to subsequent screens (described in the following pages). Confirm the already set STEP (STEP 1) by ENTER.

To test this text, pull the START button on the grip.

To program a second STEP, confirm by ENTER the function INSERT, choosing another kind of job and so on.

Once the marking cycle has been completed, exit by ESC, and the job will be stored in the zero memory.

*Before programming a new marking cycle it is necessary to delete by CLEAR all the STEPS stored in the zero memory. Otherwise new STEPS are added to the existing cycle.*

Depressing the START button the whole cycle is marked.
The DOTS.DIST set, the PWM default value, the MARKING TIME and the MEM. N. (that is the number of the filed memory actually stored in the zero memory) are shown on the display.
The PWM value may be changed, using the keys      (ARROW UP) and      (ARROW DOWN), when exit with ESC.

## 3. MEMORY MANAGEMENT

To load into the file memory the cycle programmed in the zero memory, depress twice key FN and enter MEMORY MANAGEMENT.

The unit is proposing the first empty memory. For an easier subsequent search, it is convenient to give it a name.

The functions SAVE, LOAD, ERASE and MODIFY are now proposed.

Therefore, to save in file memory a job programmed in zero memory, it is necessary to confirm by ENTER the function SAVE.
To load in zero memory a job already saved in file memory, it will be necessary to confirm by ENTER the function LOAD.

To delete a job already stored in file memory it will be sufficient to confirm by ENTER the function ERASE.

*Remember that in file memory no modification is possible. Any modification can be done only in zero memory, as follows:*
By key (ARROW DOWN) recall the memory you want to modify and load it into the zero memory by function LOAD. Then enter into zero memory by MEMORY PROGRAMMING and MODIFY.
Return to MEMORY MANAGEMENT and confirm MODIFY in the desired memory.

## 4. PRACTICAL MARKING TEST

When practical marking has to be done, connect the unit to compressed air (max. 7 bar) that should be <u>clean, dry and not lubricated.</u>

When you are in the first screen or when a step is confirmed, you can see a **P** letter on the top right side of the display. This means that the pressure is activated inside the stamper.
Depressing the ALT key, you have the **p** letter and the pressure is disactivated.

This function is mainly used to test the writing cycle without marking, to be sure all is O.K. Depressing again ALT, the **P** letter appears and the pressure is activated.

It is suggested to keep the Default parameters, adjusting Marker 's feet in such a way that the distance between the piece and the needle is approx. 10 mm.
Then, being the pressure regulator on position zero (completely anticlockwise), depress the START button gradually increasing at the same time, pressure until the desired marking result is obtained.

## 5. OTHER ADJUSTING PARAMETERS

In the third screen of MEMORY PROGRAMMING the possibility is given to adjust the MOVING SPEED of the needle.

Please note, however, that this adjustment has a very little influence on the execution time, being the DOTS DISTANCE prevalent. As a matter of fact, as much is the DOTS DISTANCE, as much is marking speed.

Subsequently, one of the standard five FONT (ISO 3098/I, MATRIX 7 x 5, BLOCK OUTLINE, UNIVERSAL and DIN 1451) proposed may be choosen. Other 13 are availabe on request.
We suggest the MATRIX 7x5 for fast marking.

Now you have to justify the character (JUST) according to the set coordinates.

For instance, RIGHT means you are writing to the right of of the selected coordinates.

In the subsequent screen, there is a very important function, used when you want to increase marking depth: Marking REPEAT.
Keeping Dx = 0 and Dy = 0 and, for instance, REPEAT = 2, the same text is being repeated twice and the dots perfectly overlap, thus producing a deeper penetration. With different Dx and Dy values the text is repeated joggled.

There is the possibility of mirrored marking (MIRROR) and the space between two characters can be either STANDARD or PROPORTIONAL.

## 6. PROGRAMMING OF CONSECUTIVE STEPS

If you have to program two different steps in a consecutive position, you can select the AUTO function instead of marking several attempts.

During programming the second step, when the slide is blinking on POSX, if you push the key (ARROW DOWN) you select the AUTO function and the second step is automatically positioned in a consecutive coordinate.

## 7. CIRCULAR MARKING

You can have a TEXT, DATE or NUMB step written in circular way. It is enough to shift the slide on the display from the arrow    to the bracket  )  , selecting it by ENTER. The coordinates of start marking position will appear together with the curving radius.

## 8. PAUSE

The PAUSE function is used when you have to mark the same workpiece in two different positions (f.i. **A** and **B**).
In this case you program, first the text **A**, then you add the PAUSE followed by the text **B**.
PAUSE can be programmed by TIME or by INPUT. During marking the stamper stops between A and B, and restarts automatically after a set time if is programmed by time, otherwise after you have again depressed the Start if it is programmed by INPUT.

## 9. MEMORY VISUALIZATION

Coming back to the main menu by ESC and depressing 3 times the FN key, you enter in the MEMORY VISUALIZATION.
In this case you can see step by step all memory contents.

## 10. DEFAULT PARAMETERS

Returning to the starting menu by ESC and depressing three times the key FN, you enter DEFAULT PARAMETERS.

We suggest not to change these parameters until a good familiarity with the functionality of the unit has been achieved, also with the complete reading of the Manual.

## 11. PASSWORD MANAGEMENT

Returning to the starting menu and depressing six times the key FN, you enter PASSWORD MAMAGEMENT. You can change the password either to enable all functions (PROGRAMMER) or to enable only the load of cycles already stored (OPERATOR)

## 12. DIAGNOSTIC FUNCTIONS

Returning to the starting menu and depressing 5 times the key FN, you enter DIAGNOSTIC FUNCTIONS. You can check the efficiency of DISPLAY, KEYBOARD, IN/OUT and the size of the marking area (AREA TEST).

## 13. STAMPER RESET

In case of a bad function, it can be useful to reset the memory.
In this case all stored data will be lost and the machine will restore the default values introduced at the factory.

You have to follow these steps:

- Switch the stamper on, keeping depressed the SPACE key

- The stamper starts to count up to 32 and then stops

- Switch off the stamper and, after few seconds, switch on it again.

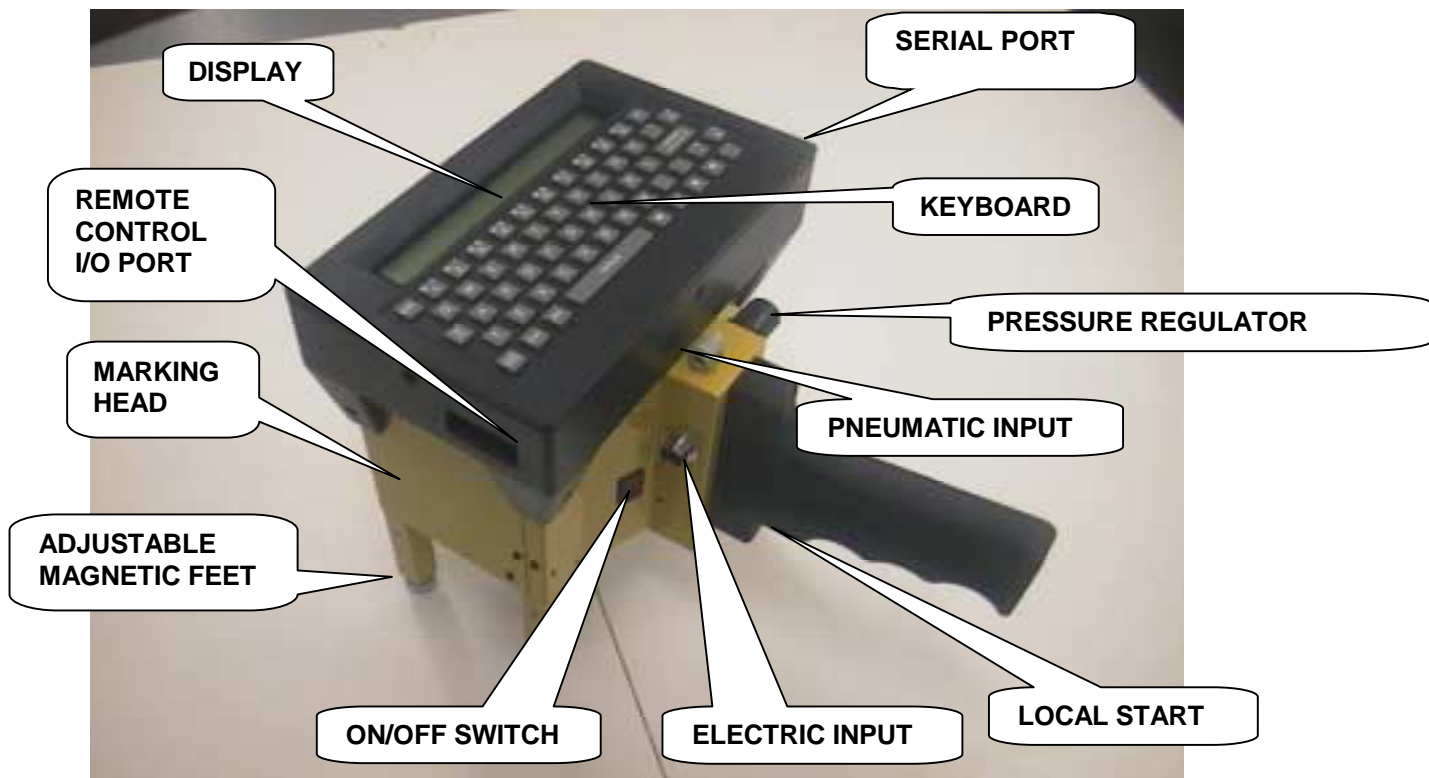Now the stamper is set as it has been released from the factory.

## Section 5 "DOCUMENTS"

- List of conversion for pressure measures.

| MPa | BAR | PSI | Kpa | millibar |
|---|---|---|---|---|
| 0,1 | 1 | 15 | 100 | 1.000 |
| 0,2 | 2 | 30 | 200 | 2.000 |
| 0,3 | 3 | 45 | 300 | 3.000 |
| 0,4 | 4 | 60 | 400 | 4.000 |
| 0,5 | 5 | 75 | 500 | 5.000 |
| 0,6 | 6 | 90 | 600 | 6.000 |
| 0,7 | 7 | 105 | 700 | 7.000 |
| 0,8 | 8 | 120 | 800 | 8.000 |
| 0,9 | 9 | 135 | 900 | 9.000 |
| 1 | 10 | 150 | 1.000 | 10.000 |

**Key combinations Hot keys (shortcuts) for fast change into single menues**

**Key sequence Ctrl +**          **Menue**

**Q**          Memory Programming
INS(ERT).UP these jobs will be marked first
INS(ERT).DW these jobs will be marked after
INS(ERT).UP jobs executed
CLEAR, ERASE, MODIFY

**W**          Memory Management
SAVE, LOAD, ERASE, MODIFY

**E**          Memory Visualization
The contents of single jobs will be displayed

**R**          Production Cycle Management
Bring together jobs of several saved memories

**T**          Factory Parameters
Character size, Position, Teach-In

**Y**          Password Management

**U**          Diagnostic (trace failure)

**I**          Quick Text function

**S**          Start marking process

**Z**          Needle moves to 0-Position (left top)

SERIAL PORT

DISPLAY

REMOTE CONTROL I/O PORT

KEYBOARD

PRESSURE REGULATOR

MARKING HEAD

PNEUMATIC INPUT

ADJUSTABLE MAGNETIC FEET

ON/OFF SWITCH

ELECTRIC INPUT

LOCAL START

**SM-110/30-HP/P VERSION**